Department of Civil Engineering

Course Name:

Probability-based Safety of Structures

Course Number: 20-155	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

Familiarity with the topics of identifying and quantifying damage in structural systems and their components for structural health monitoring.

Course Content (outline):

- Chapter 1: Definition of structural health monitoring and examination of its importance and value
- Chapter 2: Definition of damage (failure)
- Chapter 3: Damage (failure) detection at local and global levels
- Chapter 4: Sensors and data collection methods
- Chapter 5: Extracting damage-sensitive features from data
- Chapter 6: Structural system identification and determination of structural properties
- Chapter 7: Review of some statistical methods needed for structural health monitoring
- Chapter 8: Application of machine learning methods in structural health monitoring
- Chapter 9: Application of structural health monitoring methods in civil engineering

References:

- Farrar, C. K., Worden, K., Structural health monitoring: a machine learning perspective. John Wiley & Sons.
- Karbhari, V.M. and Ansari, Structural health monitoring of civil infrastructure systems. Elsevier.
- Brincker, R. and Ventura, C., Introduction to operational modal analysis. John Wiley & Sons.